

FORM PTO-1390 (Modified)
(REV 10-95)

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE

ATTORNEY'S DOCKET NUMBER

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

2867-0180-6 PCT

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR

09/485707

INTERNATIONAL APPLICATION NO.

PCT/SE98/01349

INTERNATIONAL FILING DATE

8 JULY 1998

PRIORITY DATE CLAIMED

29 AUGUST 1997

TITLE OF INVENTION

IMPROVEMENTS IN, OR RELATING TO, COMMUNICATION SYSTEMS

APPLICANT(S) FOR DO/EO/US

Klas HYLLANDER, et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.
3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☐ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☒ A copy of the International Search Report (PCT/ISA/210).
8. ☒ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
 - d. ☒ have not been made and will not be made.
9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
10. ☐ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).
11. ☒ A copy of the International Preliminary Examination Report (PCT/IPEA/409).
12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 18 below concern document(s) or information included:

13. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
14. ☐ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
15. ☒ A **FIRST** preliminary amendment.
A **SECOND** or **SUBSEQUENT** preliminary amendment.
16. ☐ A substitute specification.
17. ☐ A change of power of attorney and/or address letter.
18. ☐ Certificate of Mailing by Express Mail
19. ☒ Other items or information:

Request for Consideration of Documents Cited in International Search Report
Notice of Priority
PCT/IB/308

U.S. APPLICATION NO. (IF KNOWN) **09/485707** 37 CFR

INTERNATIONAL APPLICATION NO.

PCT/SE98/01349

ATTORNEY'S DOCKET NUMBER

2867-0180-6 PCT

20. The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

- ☐ Search Report has been prepared by the EPO or JPO **\$840.00**
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) **\$670.00**
- ☐ No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) **\$760.00**
- ☒ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO **\$970.00**
- ☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) **\$96.00**

CALCULATIONS PTO USE ONLY**ENTER APPROPRIATE BASIC FEE AMOUNT =****\$970.00**

Surcharge of **\$130.00** for furnishing the oath or declaration later than months from the earliest claimed priority date (37 CFR 1.492 (e)). ☐ 20 ☒ 30

\$130.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	38 - 20 =	18	x \$18.00	\$324.00
Independent claims	4 - 3 =	1	x \$78.00	\$78.00
Multiple Dependent Claims (check if applicable)			<input type="checkbox"/>	\$0.00

TOTAL OF ABOVE CALCULATIONS =**\$1,502.00**

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable). ☐

\$0.00**SUBTOTAL =****\$1,502.00**

Processing fee of **\$130.00** for furnishing the English translation later than months from the earliest claimed priority date (37 CFR 1.492 (f)). ☐ 20 ☒ 30 +

\$0.00**TOTAL NATIONAL FEE =****\$1,502.00**

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable). ☐

\$0.00**TOTAL FEES ENCLOSED =****\$1,502.00**

Amount to be:	\$
refunded	
charged	\$

- ☒ A check in the amount of **\$1,502.00** to cover the above fees is enclosed.
- ☐ Please charge my Deposit Account No. _____ in the amount of _____ to cover the above fees.
A duplicate copy of this sheet is enclosed.
- ☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **15-0030** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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REGISTRATION NUMBER

2-29-00

DATE

2867-0180-6 PCT

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF: :
KLAS HYLLANDER ET AL : ATTN: NEW APPLICATION DIVISION
SERIAL NO: NEW U.S. PCT APPLN :
(Based on PCT/SE98/01349)
FILED: HEREWITH :
FOR: IMPROVEMENTS IN, OR :
RELATING TO,
COMMUNICATION SYSTEMS

PRELIMINARY AMENDMENT

ASSISTANT COMMISSIONER FOR PATENTS
WASHINGTON, D.C. 20231

SIR:

Prior to a first examination on the merits, please amend the above-identified application
as follows:

IN THE SPECIFICATION

Please amend the specification as follows:

Page 1, before line 1, delete the title of the invention in its entirety, and insert therefor:

--COMMUNICATION SYSTEM INCLUDING MEANS FOR TRANSMITTING
INTERNET ADDRESSES VIA SMS--;

between line 1 and prenumbered line 3, insert

--BACKGROUND OF THE INVENTION

Field of the Invention--;

at prenumbered line 10, insert

--Discussion of the Background--.

Page 3, between prenumbered lines 11 and 13, insert

--SUMMARY OF THE INVENTION--.

Page 9, between prenumbered lines 25 and 27, insert

--BRIEF DESCRIPTION OF THE DRAWINGS--.

Page 10, between prenumbered lines 2 and 4, insert

--DESCRIPTION OF THE PREFERRED EMBODIMENTS--.

IN THE CLAIMS

Please amend the claims as follows:

Claim 4, line 1, delete "or claim 3".

Claim 5, line 1, change "any of claims 2 to 4" to --claim 2--.

Claim 7, lines 1-2, delete "when appended to either claim 4, or claim 5,".

Claim 9, line 1, change "any of claims 6 to 8" to --claim 6--.

Claim 10, line 1, change "any of claims 6 to 8" to --claim 6--.

Claim 11, line 1, change "any preceding claim" to --claim 1--.

Claim 14, line 1, change "any of claims 11 to 13" to --claim 11--.

Claim 15, line 1, change "any of claims 11 to 13" to --claim 11--.

Claim 16, line 1, change "any of claims 11 to 13" to --claim 11--.

Claim 17, line 1, change "any preceding claim" to --claim 1--.

Claim 21, line 1, delete "or claim 20,".

Claim 22, change "any of claims 19 to 21" to --claim 19--.

Claim 24, line 1, delete "when appended to either claim 21, or claim 22,".

Claim 26, line 1, change "any of claims 23 to 25" to --claim 23--.

Claim 27, line 1, change "any of claims 23 to 25" to --claim 23--.

Claim 28, line 1, change "any of claims 18 to 27" to --claim 18--.

Claim 31, line 1, change "any of claims 28 to 30" to --claim 28--.

Claim 32, line 1, change "any of claims 28 to 30" to --claim 28--.

Claim 33, line 1, change "any of claims 28 to 30" to --claim 28--.

Claim 34, line 1, change "any of claims 18 to 33" to --claim 18--.

IN THE ABSTRACT

Page 29, line 1 after the title, change "The invention provides a" to --A--;

last line, delete in its entirety.

REMARKS

Favorable consideration of this application, as presently amended, is respectfully requested.

The present Preliminary Amendment is submitted to place the above-identified application in more proper format under United States Practice. By the present Preliminary Amendment, the specification has been amended to include proper headings. The claims have been amended to no longer recite any multiple depending claims. The abstract has been amended to correct for minor informalities.

The present application is believed to be in condition for a full and thorough examination on the merits. An early and favorable consideration of the present application is hereby respectfully requested.

Respectfully submitted,

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Communication system including means for
transmitting internet addresses via SMS

The invention relates to a communication system including a cellular radio communication network, such as a Global System for Mobile Communication (GSM) network, that is adapted to enable a GSM subscriber to make an Internet telephone call to an Internet user. In particular, a 'short message service' (SMS) is used to transfer address information for the Internet user to an Internet server. The invention also relates to a method for enabling a GSM subscriber to make an Internet telephone call to an Internet user using SMS to transfer address information for the Internet user.

It is highly probable that, within a few years, a very large proportion of the population of, for example, Sweden, will use the Internet in their day-to-day activities for a number of purposes, including, inter alia:

- entertainment;
- electronic shopping/banking;
- retrieving information in respect of a wide range of subject matter;
- as an information bank; and
- person-to-person communication.

At the present time, e-mail is the major Internet application, but it would clearly be of advantage to telephone subscribers if Internet telephony became, in the long term, a readily available subscriber service for personal communication. Forecasts envisage that Internet traffic, as compared with present day levels, could be increased many times by telephony. For a telephone operator, this is a development which, although it could reduce revenues, will give rise to major developments in, and/or opportunities for, new subscriber services.

At the present time, a number of different Internet telephony solutions are

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currently available and in commercial operation.

The main advantage of known Internet telephony services is that the cost of long-distance calls can be considerably reduced. This cost reduction is effected by using local access points for the telephone calls and by using the Internet for the long-range transportation/transmission of telephone traffic. Services already launched include, inter alia:

- telephony from Internet-connected users to PSTN (Public Switched Telephone Network) subscribers, in which the PSTN subscriber is called by a local interworking server;
- a service in which both A-subscribers and B-subscribers are PSTN-connected to local servers which have contact with each other via the Internet - it will be seen from the subsequent description of the present invention that, in the longer term, it will also be able to transmit speech via GSM in the same manner.

The mobile cellular radio communication network, known as GSM, which is covered by standards developed and promulgated by the European Telecommunications Standards Institute (ETSI), offers a variety of services to users, other than voice, including, inter alia, data services, short message services, and broadcast services. The ETSI GSM Standards specify, in addition to the radio interface, a complete telecommunications network with radio access by the user. Since the architecture, and operational aspects, of GSM are well known to persons skilled in the art, only those aspects of GSM which are of direct relevance to the present invention will be described in this patent specification.

Thus, a GSM mobile connection is distinguished from a conventional PSTN connection in that the mobile station, apart from having access to speech services, can access a short message service (SMS)

SMS is a feature which is incorporated into digital mobile telephone networks,

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and can be divided into two types, point-to-point services (SMS-PP), and broadcast services (SMS-CB).

5 SMS-PP allows a brief message (up to 160 characters) to be sent between a mobile telephone and a Service Centre (SC). Larger messages can optionally be created by concatenating multiple messages (the protocol allows up to 10 messages to be concatenated in this way). The SC is adapted to send, or receive, messages from a wide variety of sources, in addition to a GSM mobile telephone, for example, fax, normal telephone, dial up modems, public, or private data networks etc.. This means
10 that the service is not limited to sending messages between GSM mobile telephones, but can be used to send, or receive, messages from the wider telecommunications network.

An advantage of using SMS, in the present invention, is that it can be used by a GSM subscriber to establish a telephone connection to an Internet-connected user,
15 without any additional equipment being necessary.

It is an object of the present invention to provide a communication system including a cellular radio communication network, such as a Global System for Mobile Communication (GSM) network, that is adapted to use a short message service (SMS)
20 to enable a GSM subscriber to make an Internet telephone call to an Internet user. In particular, SMS is used to transfer address information for the Internet user to an Internet server.

It is another object of the present invention to provide a method for enabling a
25 GSM subscriber to make an Internet telephone call to an Internet user using SMS to transfer address information for the Internet user.

According to a first aspect of the present invention, there is provided, a communication system adapted to establish connections to, and between, Internet users, characterised in that said communication system includes a cellular radio communication network adapted to provide a short message service (SMS), and a server
30 adapted to facilitate the establishment of a telephony/Internet connection between a mobile subscriber station of said network and an Internet user, and said SMS is adapted

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to transfer, from said mobile subscriber station to said server, information identifying the Internet address for said Internet user; and, from said server to said mobile subscriber station, information relating to said connection between said mobile subscriber station and said Internet user.

SMS may be used to transfer the following information to said telephony/Internet server:

- (a) the Internet address for an Internet-connected computer terminal of said Internet user; and
- (b) a specific identity for said mobile subscriber station, for example, a telephone number for said mobile subscriber station.

The telephony/Internet server may include analysing means for effecting, on receipt of said SMS-transferred information, an A-number analysis to determine the A-telephone number identity of said mobile subscriber station.

The telephony/Internet server may be adapted, in response to receipt of said SMS-transferred information from said mobile subscriber station, to send an SMS to said mobile subscriber station including the following information:

- (a) that call connection to said Internet user is possible; and
- (b) the server's telephone number.

The telephony/Internet server may be adapted, on receipt of a call from said mobile subscriber station, made using the server's telephone number, to identify said mobile subscriber station (calling party), associate the telephone call with the Internet address previously transferred to said server by said mobile subscriber station, and connect the telephone call to the Internet address.

The telephony/Internet server may be adapted to identify said mobile subscriber

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station (calling party) using said A-number analysing means. The Internet address may be associated with the A-telephone number of said mobile subscriber station for a specific period of time which is monitored by a system timer.

5 The telephony/Internet server may be adapted to connect the telephone call either directly to the Internet address, or to the Internet address via at least one additional Internet server, a server at the end of this chain being adapted to provide Internet telephony services.

10 The telephony/Internet server may include means for establishing and storing a list of Internet addresses for each mobile subscriber station user subscribing to the system, and each one of said Internet addresses may have an address list number.

15 The telephony/Internet server may be adapted, in response to receipt of said SMS-transferred information from said mobile subscriber station, to send an SMS to said mobile subscriber station including the following information:

- 20 (a) that call connection to said Internet user is possible;
- (b) the server's telephone number; and
- (c) an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server.

25 The address list numbers may be stored in a respective mobile subscriber station's telephone number list.

30 The mobile subscriber station may be adapted to request from said telephony/Internet server, and said telephony/Internet server may be adapted to supply to the mobile subscriber station, a complete listing of the Internet address list.

 The mobile subscriber station may be adapted to search for a specific one of the

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Internet addresses stored by said telephony/Internet server.

The telephony/Internet server may be adapted, on receipt of a call connection request from a mobile subscriber station to an unlisted Internet address, to store, and assign an address list number to, the unlisted Internet address, and send back, to the mobile subscriber station, via SMS, the following information to enable a user of said mobile subscriber station to call said Internet address:

- (a) the assigned address list number;
- (b) the server's telephone number; and
- (c) information that call connection is possible to the Internet address.

According to a second aspect of the present invention, there is provided, a method for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, characterised by the use of SMS to transfer, from said mobile subscriber station to a telephony/Internet server, information identifying the Internet address for said Internet user; and, from said telephony/Internet server to said mobile subscriber station, information relating to said connection between said mobile station and said Internet user. This method may be further characterised by said SMS being used to transfer the following information to said telephony/Internet server: the internet address for an Internet-connected computer terminal of said Internet user; and a specific identity for said mobile subscriber station, for example, a telephone number for said mobile subscriber station.

The method may be characterised by said telephony/Internet server, on receipt of said SMS-transferred information, using A-number analysis to determine the A-telephone number identity of said mobile subscriber station.

The method may be characterised by said telephony/Internet server, in response to receipt of said SMS-transferred information from said mobile subscriber station, sending an SMS to said mobile subscriber station including the following information:

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that call connection to said Internet user is possible; and the server's telephone number.

5 The method may be characterised by said mobile subscriber station calling the server's telephone number, and said server, on receipt of the call from said mobile subscriber station, identifying said mobile subscriber station (calling party), associating the telephone call with the Internet address previously transferred to said server by said mobile subscriber station, and connecting the telephone call to the Internet address. This method may be further characterised by said telephony/Internet server identifying said mobile subscriber station (calling party) using said A-number analysis.

10 The method may be characterised by associating said Internet address with the A-telephone number of said mobile subscriber station for a specific period of time, and by monitoring said period of time.

15 The method may be characterised by said telephony/Internet server connecting the telephone call either directly to the Internet address, or to the Internet address via at least one additional Internet server, a server at the end of this chain being adapted to provide Internet telephony services.

20 The method may be characterised by said telephony/Internet server establishing and storing a list of Internet addresses for each mobile subscriber station user wishing to make Internet telephone calls, and by each one of said Internet addresses having an address list number. This method may be further characterised by said telephony/Internet server, in response to receipt of said SMS-transferred information from said mobile subscriber station, sending an SMS to said mobile subscriber station including the following information: that call connection to said Internet user is possible, the server's telephone number, and an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server. This method may
25
30 be further characterised by storing said address list numbers in a respective mobile subscriber station's telephone number list.

The method may be characterised by a mobile subscriber station requesting a

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complete listing of the Internet address list from said telephony/Internet server.

The method may be characterised by a mobile subscriber station searching for a specific one of the Internet addresses stored by said telephony/Internet server.

The method may be characterised by said telephony/Internet server, on receipt of a call connection request from a mobile subscriber station to an unlisted Internet address, storing, and assigning an address list number to, the unlisted Internet address; and by sending back, to the mobile subscriber station, via SMS, the following information to enable a user of said mobile subscriber station to call said Internet address: the assigned address list number, the server's telephone number, and information that call connection is possible to the Internet address.

According to a third aspect of the present invention, there is provided, a method for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, characterised by a user of said mobile subscriber station sending the following information to a telephony/Internet server using SMS: information identifying the Internet address for said Internet user, and the specific identity of said mobile subscriber station (for example, the telephone number for the mobile subscriber station); said telephony/Internet server, in response to receipt of said information, sending an SMS to said mobile subscriber station, said SMS including the following information: that connection to said Internet address is possible, and the server's telephone number; a user of said mobile subscriber station, on receipt of the SMS from the server, calling the server's telephone number; and the server, on receipt of the telephone call from the mobile subscriber station, identifying the calling party (mobile subscriber station) using, for example, A-number analysis, associating the telephone call with the Internet address previously received in the SMS from the mobile subscriber station; and connecting the telephone call to the Internet address.

According to a fourth aspect of the present invention, there is provided, a method for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, characterised by establishing and storing a list of Internet addresses for each mobile subscriber station user wishing to

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make Internet telephone calls; assigning, for each address in the Internet address list, a number which uniquely identifies these addresses; a user of said mobile subscriber station sending the following information to a telephony/Internet server using SMS: information identifying the Internet address for said Internet user, and the specific identity of said mobile subscriber station (for example, the telephone number for the mobile subscriber station); said telephony/Internet server, in response to receipt of said information, sending an SMS to said mobile subscriber station, said SMS including the following information, that connection to said Internet address is possible, the server's telephone number, and an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server; a user of said mobile subscriber station, on receipt of the SMS from the server, calling the server's telephone number; the telephony/Internet server, on receipt of the telephone call from the mobile subscriber station, transmitting a voice message to said mobile subscriber station requesting the user to key in an address list number; and, when said mobile subscriber station user keys in said address list number, said telephony/Internet server connecting the user of said mobile subscriber station to an Internet user at the Internet address corresponding to the address list number. This method may be further characterised by said telephony/Internet server, in the absence of a response from the Internet user, notifying the user of said mobile subscriber terminal by means of either a voice message, or tones, as in conventional telephony. This method may be further characterised by said notification being that the Internet user is engaged, or is not replying, or does not have an Internet telephony application.

The cellular radio communication network may be a GSM network.

The foregoing and other features of the present invention will be better understood from the following description with reference to the accompanying drawings, in which:

Figure 1 diagrammatically illustrates a communication system having a number of different Internet telephony arrangements; and

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Figure 2 diagrammatically illustrates a communication system according to the present invention.

It will be seen from the communication system, which is diagrammatically illustrated in Figure 1 of the accompany drawings, that:

- (a) PSTN subscriber telephones 1 and 2, are respectively connectd to the Internet 3 via Telephony/Internet IWU (InterWorking Unit) Servers 4 and 5; and
- (b) Internet users are connected to the Internet 3 by means of a user terminal 6 which is, in essence, a computer terminal, such as a personal computer, with a display screen and having a telephone handset 7 connected thereto. The Internet user terminal 6 is connected to the Internet 3 via a modem (not illustrated) and includes appropriate Internet software for facilitating the establishment of a connection to, and interaction with, the Internet 3.

In practice, a PSTN subscriber telephone, in Figure 1, could be replaced by a GSM mobile station/handset and a GSM network, in which case, a MSC (Mobile Switching Centre) of the GSM network would be directly connected to an Internet server via 64 kbps PCM (Pulse Code Modulation).

The manner in which telephone calls are established, via the Internet 3, between the PSTN subscriber telephones 1 and 2 and/or between the Internet user terminal 6 and a PSTN subscriber telephone 1 or 2, is well known to persons skilled in the art and will not, therefore, be addressed, in great detail, by this patent specification.

In order to be able to interconnect speech to an Internet telephony user, via GSM, or conventional PSTN, it is necessary to have a coder which is adapted to re-code the PCM-coded speech data flow and to send this over the Internet. Equipment for effecting this task is readily available from a number of manufacturers. These equipments are, however, primarily based on either PSTN-to-PSTN, or Internet-to-PSTN. These models are easier to solve than a telephone call which originates in the PSTN, or GSM speech service, and terminates in the Internet.

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The problem facing the GSM subscriber is how he/she is to address the Internet user without having access to an alphanumeric keyboard. The SMS service of GSM has an alphanumeric capability and can, therefore, be used for GSM/Internet telephony services.

If a B-subscriber (called party, or recipient) is PSTN-connected, the recipient's usual telephone number is specified on calling. Basically, by dialling the B-subscriber's telephone number, the Internet telephony server can connect to the Internet telephony server located nearest the B-subscriber and route the call to that server. The distant server, i.e. local to the B-subscriber, then calls the B-subscriber, and a call connection can be established.

However, if a GSM subscriber (A-subscriber, or calling party) wishes to make telephone contact with a third party (B-subscriber, or called party) who does not have a 'conventional' telephone number, but is connected to the Internet, i.e. is an Internet user, the A-subscriber must specify the recipient's (called party's) 'Web Phone Number'. This may be an Internet, or e-mail, address. It is difficult, if not impossible, to transfer this information from a GSM mobile station/handset, or from a conventional telephone, to the server. An Internet address, i.e. the IP (Internet Protocol) address, which is 12 digits long, can certainly be transferred by DTMF (Dual Tone Multifrequency). However, if the calling party only has the e-mail address, i.e. a DNS (Domain Name System) address, and not the Internet address (IP address), for an Internet user he/she wishes to call, it is difficult, if not impossible, for the calling party to establish a connection to the Internet user. Thus, in these circumstances, it will be necessary for the Internet address to be separately transferred to an Internet telephony server, and possibly also for a personal address list to be established in an Internet telephony server to which the user has a subscription. This can be effected, in accordance with the present invention, by using the GSM short message service (SMS), in a manner which will subsequently be described with reference to Figure 2 of the accompanying drawings.

It will be seen from Figure 2 of the accompanying drawings, which diagrammatically illustrates a communication system according to the present invention, that the Internet user terminal 6/telephone handset 7 combination of Figure 1 of the

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accompanying drawings, is also shown in Figure 2, together with a GSM mobile station/handset 8, GSM network 9, SMS Service Centre (SC) 10 and Telephony/Internet IWU Server 11 which is connected to the GSM network 9 and the SMS SC 10. The communication system of Figure 2 is adapted to connect a telephone call, originated by the GSM mobile station 8, to a user of the Internet terminal 6 using SMS to facilitate the transfer of the Internet address for the user terminal 6.

Thus, when a GSM subscriber wishes to make an Internet telephone call, using the mobile station 8, to an Internet-connected user, i.e. the user of the Internet user terminal 6, SMS is used to transfer the Internet address information, for the Internet user, to the Internet server 11 via the SMS Service Centre 10. With such an interconnection arrangement, several different scenarios are possible.

A first one of these scenarios, which provides the simplest solution, uses the GSM short message service (SMS) to transfer:

- the Internet address information from the GSM mobile station 8 to the Telephony/Internet IWU (InterWorking Unit) server 11; and
- from the server 11 to the GSM mobile station 8, information for effecting the establishment of a telephony/Internet telephony connection between the GSM mobile station 8 and an Internet user, i.e. information which identifies the server's telephone number and which informs the GSM subscriber that a connection to the Internet user is possible.

On receipt of this information, the GSM mobile station 8 can then connect a telephone call to the server 11, which associates the telephone call with the previously sent Internet address for the Internet user. In operation, the following are sent to the interworking server 11 via SMS:

- the Internet address to the destination computer, i.e. the Internet user terminal 6 of the called party; and

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- the specific identity, for example, the specific telephone number for the GSM subscriber - an A-number analysis can be used to obtain the specific identity, which is why it need not be stated in plain language in the SMS message.

5 The server 11 responds with an SMS - this SMS includes information that a connection to the Internet user (Internet address) is possible, together with the telephone number for the interworking server 11.

10 The GSM subscriber can then call the server's telephone number and, on receipt of this call, the server 11 can, via an A-number analysis (see above), associate the telephone call to the Internet address previously sent in the first SMS. In practice, the Internet address is associated with the GSM A-telephone number for a specific period of time which is monitored by a timer which forms part of the communication system. The server 11 thereafter connects the telephone call either directly to the Internet user, or indirectly via at least one additional Internet server, a server at the end of this chain being adapted to provide Internet telephony services.

15 It will be seen, from the foregoing description of the first interconnection scenario, that a method, according to present invention, for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, is characterised by the steps of:

- 20 (a) a user of said mobile subscriber station sending the following information to a telephony/Internet server using SMS:

- 25 - information identifying the Internet address for said Internet user; and
- the specific identity of said mobile subscriber station (for example, the telephone number for the mobile subscriber station);

- 30 (b) said telephony/Internet server, in response to receipt of said information, sending an SMS to said mobile subscriber station, said SMS including the following information:

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- that connection to the Internet address is possible; and
 - the server's telephone number;
- 5 (c) a user of said mobile subscriber station, on receipt of the SMS from the server, calling the server's telephone number; and
- (d) the server, on receipt of the telephone call from the mobile subscriber station:
- 10 - identifying the calling party (mobile subscriber station) using, for example, A-number analysis;
 - associating the telephone call with the Internet address previously received in the SMS from the mobile subscriber station; and
 - 15 - connecting the telephone call to the Internet address.

The advantages of this interconnection arrangement are that the Telephony/Internet server 11 does not need to know the identity of the GSM subscriber, and no subscription is needed.

20

If a GSM operator is in possession of appropriate equipment, debiting charges for the telephone can be effected, in a manner known to persons skilled in the art, without any very serious problems.

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Another one of the interconnection scenarios, which is a more advanced version of the first interconnection scenario, involves the establishment of an address list in the Internet telephony server 11. In this case, the GSM subscriber will have a subscription with an Internet telephony service provider.

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This, more advanced, scenario uses the same SMS, as outlined above for the first scenarios, i.e. with the Internet address being sent to the destination computer and the specific identity to the server 11. The SMS reply contains, in addition to the

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telephone number to the server and information that call connection is possible, an address listing including the Internet address for the Internet user. Each address list number corresponds to one of the Internet addresses in the GSM subscriber's address list in the server. These numbers can be stored in the mobile subscriber telephone's telephone number list.

In the event that a GSM subscriber forgets a number, the SMS procedure, as outlined above, can be effected in order to obtain the Internet address list number. The subscriber can also request a complete listing of the Internet address list, or search for a specific letter.

It will be seen, from the foregoing description of the second interconnection scenario, that a method, according to present invention, for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, is characterised by the steps of:

- (a) establishing and storing a list of Internet addresses for each mobile subscriber station user wishing to make Internet telephone calls;
- (b) assigning, for each address in the Internet address list, a number which uniquely identifies these addresses;
- (c) a user of said mobile subscriber station sending the following information to a telephony/Internet server using SMS:
 - information identifying the Internet address for said Internet user; and
 - the specific identity of said mobile subscriber station (for example, the telephone number for the mobile subscriber station);
- (d) said telephony/Internet server, in response to receipt of said information, sending an SMS to said mobile subscriber station, said SMS including the following information:

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- that connection to the Internet address is possible;
 - the server's telephone number; and
 - 5 - an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server;
- (e) a user of said mobile subscriber station, on receipt of the SMS from the server, calling the server's telephone number;
- 10 (f) the telephony/Internet server, on receipt of the telephone call from the mobile subscriber station, transmitting a voice message to said mobile subscriber station requesting the user to key in an address list number; and
- 15 - when said mobile subscriber station user keys in said address list number, said telephony/Internet server connects the user of said mobile subscriber station to an Internet user at the Internet address corresponding to the address list number; or
- 20 - said telephony/Internet server, in the absence of a response from the Internet user, notifying the user of said mobile subscriber terminal by means of either a voice message, or tones, as in conventional telephony, that the Internet user is engaged, or is not replying, or does not have an Internet telephony application.
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The advantage of the second interconnection scenario is that:

- the service becomes more user-friendly; and
 - a conventional telephone (not having access to an SMS facility) with a DMTF function can be used to call an Internet user if the address list number is known.
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In the case of the second, or more advanced scenario, outlined above, if a GSM subscriber has 32 addresses in his/her list and wants to connect a telephone call to a new address, then the following procedure would have to be effected:

- 5 (1) The GSM subscriber sends a call connect request, together with an enquiry about the Internet address's address list number in the server 11.

SMS: <internet address> (12 digits, or e-mail address)

- 10 (2) The server 11 stores the new address in the address list and sends back, to the GSM subscriber, the address list number, telephone number, and information that coupling is possible.

SMS: coupling to <internet address> is OK! Call

15 <server telephone number>[pause]<address list number#>

(list number in this case would be 33#, or the first vacant one)

- 20 (3) The GSM subscriber can now call the server's telephone number. On receipt of a call from the GSM subscriber, the server transmits a voice message requesting the user (by DMTF) to key in an address list number. On some GSM-compatible mobile stations/telephones, for example, the Ericsson GH388, a DMTF string can be added to the telephone number, after a pause symbol, before the connection is made. A telephone number sent by the server in SMS would then appear as follows: 0705110646p33#.

25 When the GSM subscriber has dialled the number and the address list number, the server 11 establishes an Internet connection to the destination address (possibly via at least one additional Internet telephony server, as outlined above). If the Internet user does not reply, the GSM subscriber is notified via either a speech message, or tones, as in conventional telephony. A notification message may be that the Internet user:

30 - is engaged.

- 18 -

- is not replying; or
- does not have an Internet telephony application.

5 As an alternative to SMS, the GSM service 'Alternate Speech/Data' could be used. The advantages of this alternative are that only one call coupling is required. With this alternative arrangement, the telephone call is initiated through data transfer of the Internet address to the server 11 from the mobile station/handset 8, after which the server 11 can connect the connection to the Internet party. The GSM access then
10 connects over the speech, and the call can take place. The disadvantage of this solution is that data terminal functionality is required, for example, a computer, or advanced GSM mobile terminal, for example, the Nokia Communicator 9000 type. Note that this is not necessary if SMS is used as data carrier.

15 It will be seen from the foregoing description that the present invention relates to the manner in which a GSM subscriber can connect an Internet telephone call through the IP (Internet Protocol) address information being transferred via SMS and can, therefore, be used for an Internet telephony service based on GSM's speech service access. The use of the short message service (SMS), available in a mobile telephone
20 terminal, to transfer an Internet address, or e-mail address with alphanumeric symbols, means that no additional equipment is required, such as, for example, a portable computer, to transfer Internet telephony calls to an Internet-connected called party.

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CLAIMS

1. A communication system adapted to establish connections to, and between, Internet users, characterised in that said communication system includes a cellular radio communication network adapted to provide a short message service (SMS), and a server adapted to facilitate the establishment of a telephony/Internet connection between a mobile subscriber station of said network and an Internet user, and in that said SMS is adapted to transfer:

- from said mobile subscriber station to said server, information identifying the Internet address for said Internet user; and
- from said server to said mobile subscriber station, information relating to said connection between said mobile subscriber station and said Internet user.

2. A communication system as claimed in claim 1, characterised in that said SMS is used to transfer the following information to said telephony/Internet server:

- the Internet address for an Internet-connected computer terminal of said Internet user; and
- a specific identity for said mobile subscriber station.

3. A communication system as claimed in claim 2, characterised in that said specific identity for said mobile subscriber station is a telephone number for said mobile subscriber station.

4. A communication system as claimed in claim 2, or claim 3, characterised in that said telephony/Internet server includes analysing means for effecting, on receipt of said SMS-transferred information, an A-number analysis to determine the A-telephone number identity of said mobile subscriber station.

5. A communication system as claimed in any of claims 2 to 4, characterised in that

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said telephony/Internet server is adapted, in response to receipt of said SMS-transferred information from said mobile subscriber station, to send an SMS to said mobile subscriber station including the following information:

- that call connection to said Internet user is possible; and
- the server's telephone number.

6. A communication system as claimed in claim 5, characterised in that said telephony/Internet server is adapted, on receipt of a call from said mobile subscriber station, made using the server's telephone number, to:

- identify said mobile subscriber station (calling party);
- associate the telephone call with the Internet address previously transferred to said server by said mobile subscriber station; and
- connect the telephone call to the Internet address.

7. A communication system as claimed in claim 6, when appended to either claim 4, or claim 5, characterised in that said telephony/Internet server is adapted to identify said mobile subscriber station (calling party) using said A-number analysing means.

8. A communication system as claimed in claim 7, characterised in that said Internet address is associated with the A-telephone number of said mobile subscriber station for a specific period of time which is monitored by a system timer.

9. A communication system as claimed in any of claims 6 to 8, characterised in that said telephony/Internet server is adapted to connect the telephone call directly to the Internet address

10. A communication system as claimed in any of claims 6 to 8, characterised in that said telephony/Internet server is adapted to connect the telephone call to the Internet

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address via at least one additional Internet server, a server at the end of this chain being adapted to provide Internet telephony services.

11. A communication system as claimed in any preceding claim, characterised in that said telephony/Internet server includes means for establishing and storing a list of Internet addresses for each mobile subscriber station user subscribing to the system, and in that each one of said Internet addresses has an address list number

12. A communication system as claimed in claim 11, characterised in that said telephony/Internet server is adapted, in response to receipt of said SMS-transferred information from said mobile subscriber station, to send an SMS to said mobile subscriber station including the following information:

- that call connection to said Internet user is possible;
- the server's telephone number; and
- an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server.

13. A communication system as claimed in claim 12, characterised in that said address list numbers are stored in a respective mobile subscriber station's telephone number list.

14. A communication system as claimed in any of claims 11 to 13, characterised in that a mobile subscriber station is adapted to request from said telephony/Internet server, and said telephony/Internet server is adapted to supply to the mobile subscriber station, a complete listing of the Internet address list.

15. A communication system as claimed in any of claims 11 to 13, characterised in that a mobile subscriber station is adapted to search for a specific one of the Internet addresses stored by said telephony/Internet server

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16. A communication system as claimed in any of claims 11 to 13, characterised in that said telephony/Internet server is adapted, on receipt of a call connection request from a mobile subscriber station to an unlisted Internet address, to:

- 5 - store, and assign an address list number to, the unlisted Internet address; and
- send back, to the mobile subscriber station, via SMS, the following information to enable a user of said mobile subscriber station to call said Internet address:
- 10 - the assigned address list number;
- the server's telephone number; and
- information that call connection is possible to the Internet address.

17. A communication system as claimed in any one of the preceding claims, characterised in that said cellular radio communication network is a GSM network.

18. A method for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, characterised by the use of SMS to transfer:

- from said mobile subscriber station to a telephony/Internet server information identifying the Internet address for said Internet user; and
- 25 - from said telephony/Internet server to said mobile subscriber station, information relating to said connection between said mobile station and said Internet user.

19. A method as claimed in claim 18, characterised by said SMS being used to transfer the following information to said telephony/Internet server:

- the Internet address for an Internet-connected computer terminal of said Internet user, and

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- a specific identity for said mobile subscriber station.

20. A method as claimed in claim 19, characterised in that said specific identity of said mobile subscriber station is a telephone number for said mobile subscriber station.

21. A method as claimed in claim 19, or claim 20, characterised by said telephony/Internet server, on receipt of said SMS-transferred information, using A-number analysis to determine the A-telephone number identity of said mobile subscriber station.

22. A method as claimed in any of claims 19 to 21, characterised by said telephony/Internet server, in response to receipt of said SMS-transferred information from said mobile subscriber station, sending an SMS to said mobile subscriber station including the following information:

- that call connection to said Internet user is possible; and
- the server's telephone number.

23. A method as claimed in claim 22, characterised by:

- said mobile subscriber station calling the server's telephone number; and
- said server, on receipt of the call from said mobile subscriber station:
 - identifying said mobile subscriber station (calling party);
 - associating the telephone call with the Internet address previously transferred to said server by said mobile subscriber station; and
 - connecting the telephone call to the Internet address.

24. A method as claimed in claim 23, when appended to either claim 21, or claim 22,

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characterised by said telephony/Internet server identifying said mobile subscriber station (calling party) using said A-number analysis.

25. A method as claimed in claim 24, characterised by associating said Internet address with the A-telephone number of said mobile subscriber station for a specific period of time, and by monitoring said period of time.

26. A method as claimed in any of claims 23 to 25, characterised by said telephony/Internet server connecting the telephone call directly to the Internet address.

27. A method as claimed in any of claims 23 to 25, characterised by said telephony/Internet server connecting the telephone call to the Internet address via at least one additional Internet server, a server at the end of this chain being adapted to provide Internet telephony services.

28. A method as claimed in any of claims 18 to 27, characterised by said telephony/Internet server establishing and storing a list of Internet addresses for each mobile subscriber station user wishing to make Internet telephone calls, and by each one of said Internet addresses having an address list number.

29. A method as claimed in claim 28, characterised by said telephony/Internet server, in response to receipt of said SMS-transferred information from said mobile subscriber station, sending an SMS to said mobile subscriber station including the following information:

- that call connection to said Internet user is possible;
- the server's telephone number; and
- an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server.

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30. A method as claimed in claim 29, characterised by storing said address list numbers in a respective mobile subscriber station's telephone number list.

31. A method as claimed in any of claims 28 to 30, characterised by a mobile subscriber station requesting a complete listing of the Internet address list from said telephony/Internet server.

32. A method as claimed in any of claims 28 to 30, characterised by a mobile subscriber station searching for a specific one of the Internet addresses stored by said telephony/Internet server.

33. A method as claimed in any of claims 28 to 30, characterised by said telephony/Internet server, on receipt of a call connection request from a mobile subscriber station to an unlisted Internet address:

- storing, and assigning an address list number to, the unlisted Internet address; and
- sending back, to the mobile subscriber station, via SMS, the following information to enable a user of said mobile subscriber station to call said Internet address:
 - the assigned address list number;
 - the server's telephone number; and
 - information that call connection is possible to the Internet address.

34. A method as claimed in any one of claims 18 to 33, characterised in that said cellular radio communication network is a GSM network.

35. A method for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, characterised by:

- 26 -

- a user of said mobile subscriber station sending the following information to a telephony/Internet server using SMS:

- information identifying the Internet address for said Internet user; and

- the specific identity of said mobile subscriber station (for example, the telephone number for the mobile subscriber station);

- said telephony/Internet server, in response to receipt of said information, sending an SMS to said mobile subscriber station, said SMS including the following information:

- that connection to said Internet address is possible; and

- the server's telephone number;

- a user of said mobile subscriber station, on receipt of the SMS from the server, calling the server's telephone number; and

- the server, on receipt of the telephone call from the mobile subscriber station:

- identifying the calling party (mobile subscriber station) using, for example, A-number analysis; and

- associating the telephone call with the Internet address previously received in the SMS from the mobile subscriber station; and

- connecting the telephone call to the Internet address.

36. A method for enabling a mobile subscriber station of a cellular radio communication network to make an Internet telephone call to an Internet user, characterised by:

- 27 -

- establishing and storing a list of Internet addresses for each mobile subscriber station user wishing to make Internet telephone calls;
- assigning, for each address in the Internet address list, a number which uniquely identifies these addresses;
- a user of said mobile subscriber station sending the following information to a telephony/Internet server using SMS:
 - information identifying the Internet address for said Internet user; and
 - the specific identity of said mobile subscriber station (for example, the telephone number for the mobile subscriber station);
- said telephony/Internet server, in response to receipt of said information, sending an SMS to said mobile subscriber station, said SMS including the following information:
 - that connection to said Internet address is possible;
 - the server's telephone number; and
 - an address list number for the Internet address, each address list number corresponding to one of the Internet addresses in the mobile subscriber station user's address list in the telephony/Internet server;
- a user of said mobile subscriber station, on receipt of the SMS from the server, calling the server's telephone number;
- the telephony/Internet server, on receipt of the telephone call from the mobile subscriber station, transmitting a voice message to said mobile subscriber station requesting the user to key in an address list number; and

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- when said mobile subscriber station user keys in said address list number, said telephony/Internet server connecting the user of said mobile subscriber station to an Internet user at the Internet address corresponding to the address list number.

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37. A method as claimed in claim 36, characterised by said telephony/Internet server, in the absence of a response from the Internet user, notifying the user of said mobile subscriber terminal by means of either a voice message, or tones, as in conventional telephony.

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38. A method as claimed in claim 37, characterised by said notification being that the Internet user is engaged, or is not replying, or does not have an Internet telephony application.

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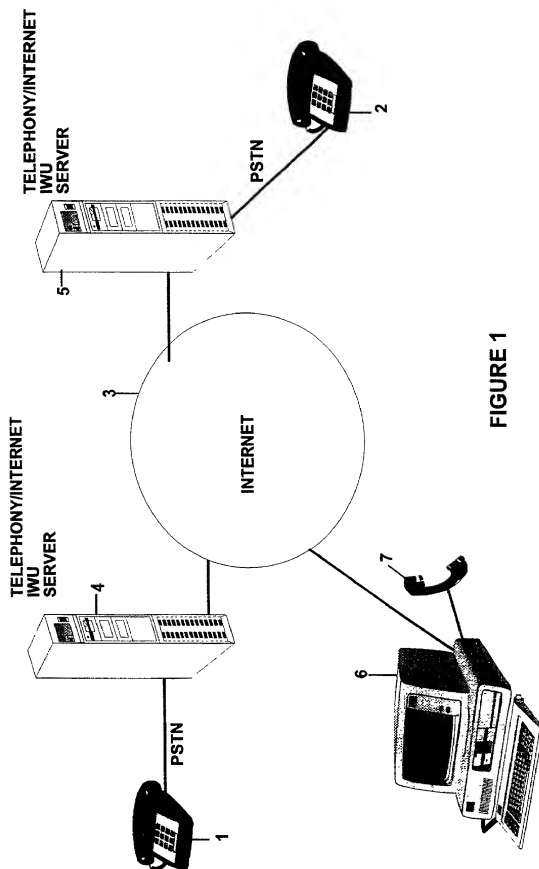


FIGURE 1

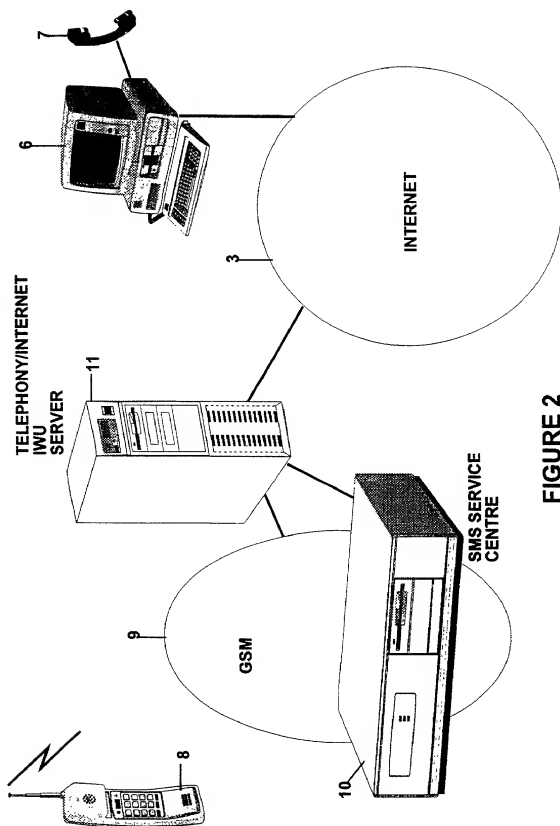


FIGURE 2

Declaration, Power Of Attorney and Petition

Page 1 of 3

WE (I) the undersigned inventor(s), hereby declare(s) that:

My residence, post office address and citizenship are as stated below next to my name,

We (I) believe that we are (I am) the original, first, and joint (sole) inventor(s) of the subject matter which is claimed and for which a patent is sought on the invention entitled

IMPROVEMENTS IN, OR RELATING TO, COMMUNICATION SYSTEMS

the specification of which

☐ is attached hereto.

☐ was filed on _____ as

Application Serial No. _____

and amended on _____.

☒ was filed as PCT international application

Number PCT/SE98/01349 _____

on JULY 8, 1998 _____,

and was amended under PCT Article 19

on _____ (if applicable).

We (I) hereby state that we (I) have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

We (I) acknowledge the duty to disclose information known to be material to the patentability of this application as defined in Section 1.56 of Title 37 Code of Federal Regulations.

We (I) hereby claim foreign priority benefits under 35 U.S.C. § 119(a)-(d) or § 365(b) of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or PCT International application having a filing date before that of the application on which priority is claimed. Prior Foreign Application(s)

Application No.	Country	Day/Month/Year	Priority Claimed
9703121-5	SWEDEN	29 AUGUST 1997	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No
_____	_____	_____	<input type="checkbox"/> Yes <input type="checkbox"/> No

We (I) hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below.

(Application Number)	(Filing Date)
(Application Number)	(Filing Date)

We (I) hereby claim the benefit under 35 U.S.C. § 120 of any United States application(s), or § 365(c) of any PCT International application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT International application in the manner provided by the first paragraph of 35 U.S.C. § 112, I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR § 1.56 which became available between the filing date of the prior application and the national or PCT International filing date of this application.

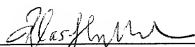
Application Serial No.	Filing Date	Status (pending, patented, abandoned)
PCT/SE98/01349	8 JULY 1998	

And we (I) hereby appoint: Norman F. Oblon, Reg. No. 24,618; Marvin J. Spivak, Reg. No. 24,913; C. Irvin McClelland, Reg. No. 21,124; Gregory J. Maier, Reg. No. 25,599; Arthur I. Neustadt, Reg. No. 24,854; Richard D. Kelly, Reg. No. 27,757; James D. Hamilton, Reg. No. 28,421; Eckhard H. Kuesters, Reg. No. 28,870; Robert T. Pous, Reg. No. 29,099; Charles L. Gholz, Reg. No. 26,395; Vincent J. Sunderdick, Reg. No. 29,004; William E. Beaumont, Reg. No. 30,996; Robert F. Gnuse, Reg. No. 27,295; Jean-Paul Lavalleye, Reg. No. 31,451; Stephen G. Baxter, Reg. No. 32,884; Robert W. Hahl, Reg. No. 33,893; Richard L. Treanor, Reg. No. 36,379; Steven P. Weihrouch, Reg. No. 32,829; John T. Goolkasian, Reg. No. 26,142; Richard L. Chinn, Reg. No. 34,305; Steven E. Lipman, Reg. No. 30,044; Carl E. Schlier, Reg. No. 34,426; James J. Kulbaski, Reg. No. 34,648; Richard A. Neifeld, Reg. No. 35,299; J. Derek Mason, Reg. No. 35,270; Surinder Sachar, Reg. No. 34,423; Christina M. Gadiano, Reg. No. 37,628; Jeffrey B. McIntyre, Reg. No. 36,867; Paul E. Rauch, Reg. No. 38,591; William T. Enos, Reg. No. 33,128; and Michael E. McCabe, Jr., Reg. No. 37,182; our (my) attorneys, with full powers of substitution and revocation, to prosecute this application and to transact all business in the Patent Office connected therewith; and we (I) hereby request that all correspondence regarding this application be sent to the firm of OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C., whose Post Office Address is: Fourth Floor, 1755 Jefferson Davis Highway, Arlington, Virginia 22202.

We (I) declare that all statements made herein of our (my) own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

100
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24/5-00
Date

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Mats Olof Winroth
Signature of Inventor

14/5-00
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NAME OF THIRD JOINT INVENTOR

Signature of Inventor

Date

NAME OF FOURTH JOINT INVENTOR

Signature of Inventor

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Post Office Address: SAME AS ABOVE

Residence: _____

Citizen of: _____

Post Office Address: _____

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